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ABSTRACT

The number of large-scale farms (farms with annual sales of $500,000 or more) increased from 11,400 in 1974 to 27,800 in 1982. Although only 1.2 percent of all U.S. farms, these farms controlled more than 10 percent of the land in farms in 1982 and accounted for nearly 33 percent of the total value of farm production. This report, using unpublished 1982 census data, examines recent trends in the number of large-scale farms, the proportion of total farmland under their control, and their contribution of total output. The report also discusses the origin of large-scale farms and their future role in U.S. agriculture. Some of the findings in the report are the following: (1) the highest growth rates for large-scale farms were in the East North Central region, the East South Central region, and the West North Central region; (2) the Pacific region had 30 percent of all farms with sales of $5 million or more; (3) large-scale farms have a higher than average value of output per acre and per dollar of investment; (4) the largest farms are predominantly cattle feedlots, poultry operations, and vegetable farms, while smaller large-scale farms are mostly cattle ranches, cash-grain farms, and dairy farms; (5) the majority of large-scale farm operators are part owners, but 40 percent of the owners operate as sole proprietors and 37 percent as corporations (mostly family corporations). (The report contains numerous tables and graphs.) (Author/KC)

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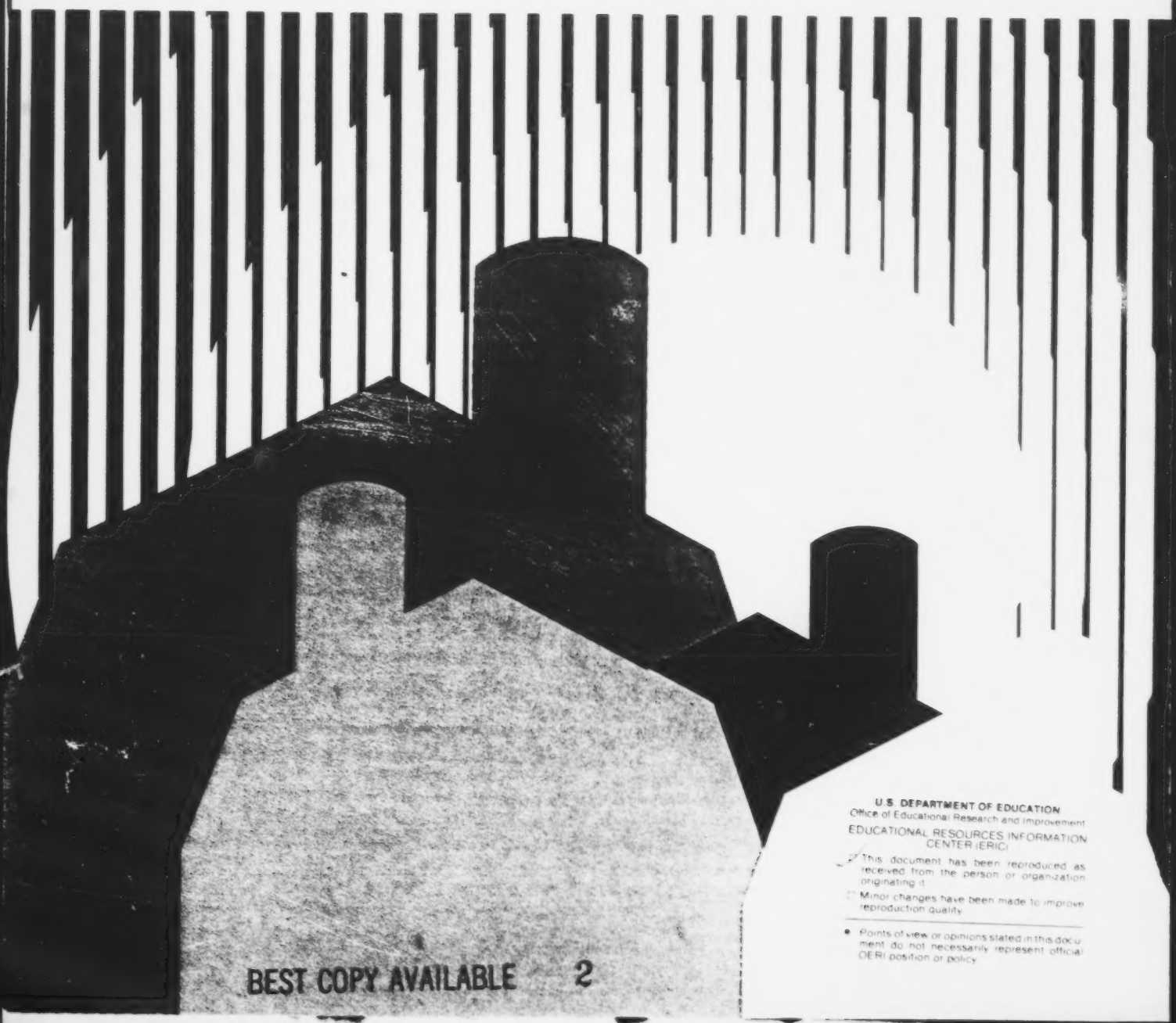
Large–Scale Farms in Perspective

Donn A. Reimund
Thomas A. Stucker
Nora L. Brooks



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Abstract

The number of large-scale farms (farms with annual sales of $500,000 or more) increased from 11,400 in 1974 to 27,800 in 1982. Although only 1.2 percent of all U.S. farms, these farms controlled over 10 percent of the land in farms in 1982 and accounted for nearly 33 percent of the total value of farm production. This report, using unpublished 1982 census data, examines recent trends in the number of large-scale farms, the proportion of total farmland under their control, and their contribution to total output. This report also discusses the origin of large-scale farms and their future role in U.S. agriculture.

Keywords: Large-scale farms, land value, sales value, farm output.

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Summary

The number of large-scale farms (farms with annual sales of $500,000 or more) increased from 11,400 in 1974 to 27,800 in 1982. Although only 1.2 percent of all U.S. farms, these farms controlled over 10 percent of the land in farms in 1982 and accounted for nearly 33 percent of the total value of farm production. Adjusted for the effects of price inflation between 1974 and 1982, the number of large farms by sales class still rises, but by 5,286 less than the increase of 16,388 in the unadjusted number.

This report, using unpublished 1982 census data, examines recent trends in the number of large-scale farms, the proportion of total farmland under their control, and their contribution to total output. This report also discusses the origin of large-scale farms and their future role in U.S. agriculture.

The highest growth rates for large-scale farms were in the East North Central region, the East South Central region, and the West North Central region. The Pacific region had 30 percent of all farms with sales of $5 million or more.

Large-scale farms have a higher than average value of output per acre and per dollar of investment. The largest farms are predominantly cattle feedlots, poultry operations, and vegetable farms. The smaller large-scale farms are mostly cattle ranches, cash-grain farms, and dairy farms.

The majority of large-scale farm operators are part owners. But 40 percent of the owners operate as sole proprietors and 37 percent as corporations (mostly family corporations). Less than 33 percent of large-scale farms with sales below $1 million operate as corporations. For farms with sales between $1 million–$4,999,999, about 50 percent operate as corporations, and nearly 80 percent of those with sales of $5 million or more are corporations.

Glossary

Large-scale farms—Farms with $500,000 or more in annual product sales.
Medium-scale farms—Farms with $100,000–$499,999 in annual product sales.
Small-scale farms—Farms with less than $100,000 in annual product sales.

Physical measures

- Production (measured in units of product)—Measures enterprise sizes. However, using this measure makes it impossible to compare size across enterprises with unlike products.

- Size (measured in acres)—Overemphasizes the importance of enterprises such as wheat production, grazing, and other land-extensive uses, possibly using low-valued land and frequently producing products having a low total value of product per acre.

Value measures

- Total value of assets used in production—Includes land, machinery, and equipment. Measure would be biased toward enterprises with high capital requirements such as dairying, tobacco production, and nursery and greenhouse crops.

- Total value of sales—Solves the problem of comparing different farms. Although the total value of sales is somewhat biased toward farms producing items further up the processing chain and therefore higher valued (livestock over grain), it is subject to movement by price variation (affected by inflation or intercommodity price relationships).

- Value added—Most accurately measures the size of farms and would not be affected by specialized higher valued products. However, current data sources are not detailed enough to allow estimation of value added (gross sales of the farm less purchased inputs) for a large sample of farms.

Large-Scale Farms in Perspective

Donn A. Reimund
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Nora L. Brooks*

Introduction

The total number of U.S. farms decreased over the past decade, while the number of large-scale farms (farms with annual product sales of $500,000 or more) increased. Large-scale farms accounted for 27,800 farms in the latest agricultural census (1.2 percent of all farms) (5). [1] However, these farms account for only 10.5 percent of land in farms and 32.4 percent of total farm sales.[2]

Much of the interest in large-scale farms centers around concern for the continued survival of farms with annual product sales of $40,000–$100,000. Recent trends indicate an increase in large farms, a decrease in middle-sized farms, and a large but steady number of small farms (1,2,6).

This report examines recent trends in the number of large-scale farms, the proportion of total farmland under their control, and their contribution to total farm output. The total value of sales is used in this report as the measure of farm size. This report also discusses the origin of large-scale farms and their future role in U.S. agriculture.

Recent Trends in Large-Scale Farms

In 1982, the 27,800 large-scale farms in the United States were about 2½ times the number of such farms in 1974 and were about 1½ times their number in 1978 (table 1). However, they accounted for only 1.2 percent of all farms. In 1982, large-scale farms operated 10.5 percent of the land in farms, making them about 10 times as large in size as the average of all farms. Between 1974 and 1982, large-scale farms doubled both in number of acres and as a percentage of land in all farms. Large-scale farms produced 32.4 percent of the total value of farm output in 1982, compared with 22.5 percent in 1974 and 27.3 percent in 1978. Farms with sales of $1 million or more accounted for nearly 25 percent of the total value of output in 1982.

Inflation between 1974–82 contributed to the rapid growth in large-scale farms. Comparing the nominal increase (16,388) in the number of these farms between 1974–82 with the 1982 constant dollar inflation adjusted increase (11,102) indicates inflation's effect on the growth of large-scale farms (3). The rate of inflation had a greater impact on the farm number distribution than on the distribution of land in farms and on sales value.

Farms reclassified into large-scale sales classes due to inflation entered into the lowest ($500,000–$999,999) large-scale category.

Table 1—Large-scale farms: Number of farms, land in farms, and value of sales

Item	Unit	1974	1978	1982
Farms	Number	11,412	17,976	27,800
Land in farms	1,000 acres	53,844	84,465	103,590
Value of sales	Mil. dol.	18,305	29,561	42,764
As percentage of:				
Number of farms	Percent	.5	.7	1.2
Land in farms	do.	5.3	8.2	10.5
Value of sales	do.	22.5	27.3	32.4

Source: (5).

[1] Italicized numbers in parentheses refer to sources cited in the References at the end of this report.

[2] This report is based on unpublished data from the 1982 Census of Agriculture. These are the most recent data available relating to large-scale farms.

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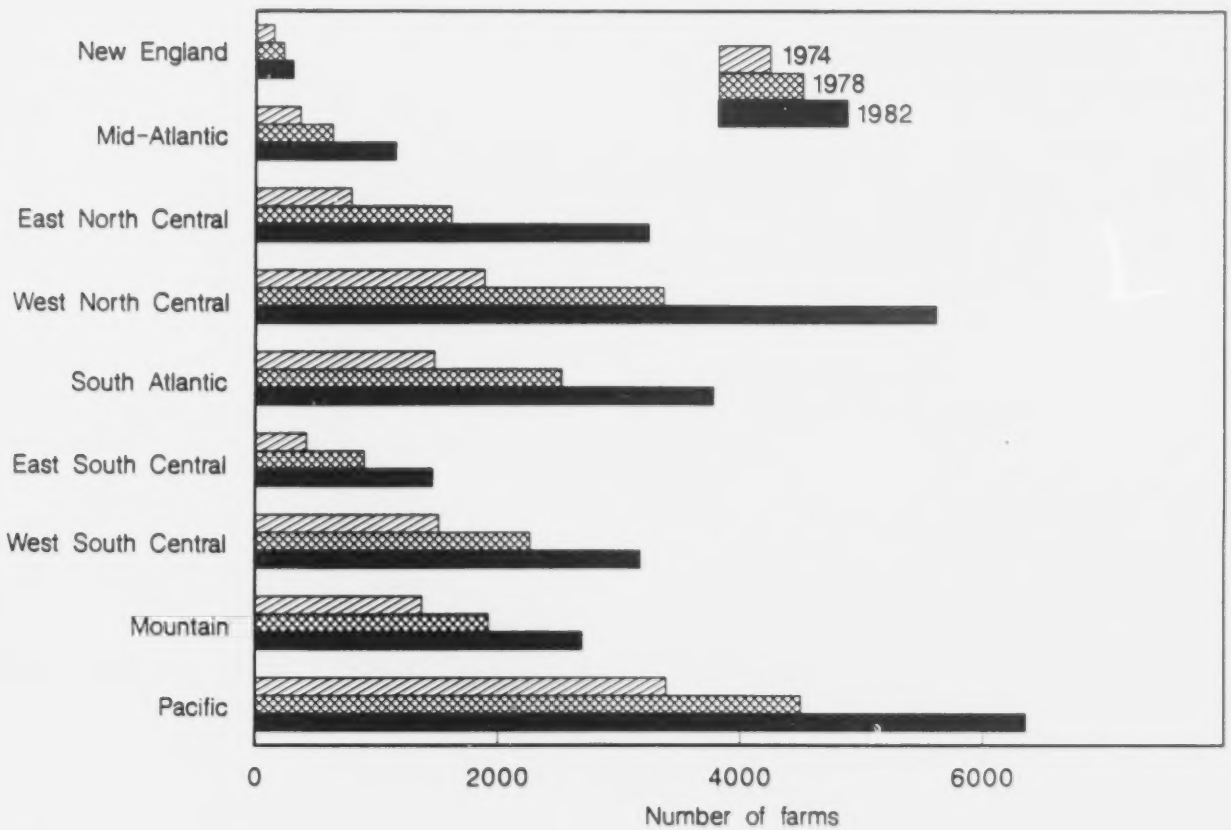
Large-scale farms increased in all regions of the country between 1974–82 (fig. 1). The East North Central region (309 percent), the East South Central region (246 percent), and the West North Central region (197 percent) had the highest growth rates. Nearly 25 percent of the growth in number of large-scale farms was in the West North Central region. Large-scale farms about doubled in the remaining regions. In 1982, there were more large-scale farms in the Pacific region than in any other region, followed by the West North Central region (figs. 1 and 2).

Although farms in this size category are a small proportion of all farms, these farms are concentrated in some enterprises to such a degree that they are extremely important to those enterprises. For example, large-scale farms produce the following percentages of total sales by product:

Item	Percent of total sales
Cattle and calves	49.1
Cotton and cottonseed	46.3
Vegetables, sweet corn, and melons	69.1
Fruits, nuts, and berries	52.0
Nursery and greenhouse crops	62.3
Poultry and poultry products	51.3
Hogs and pigs	17.5 (but growing rapidly)
Average, all farm products	32.4

Figure 1 -- Change in regional distribution of large-scale farms



Source: (6).

Origin of Large-Scale Farms

Large-scale farms in the United States were historically associated with early land settlement patterns in certain regions. The most prominent examples are the plantation system of agriculture in the pre-Civil War South and the large landholdings that originated in early Spanish land grants in the Southwest. Agriculture developed on a smaller scale in most other regions of the country. Farm size was determined by the amount of land a farmer could operate using family labor and available technology. This family-sized system of farming was institutionalized through the Homestead Act (1862) and the Reclamation Act (1902), both of which limited the size of parcels of land that constituted an individual farm.

Modern Characteristics of Large-Scale Farms

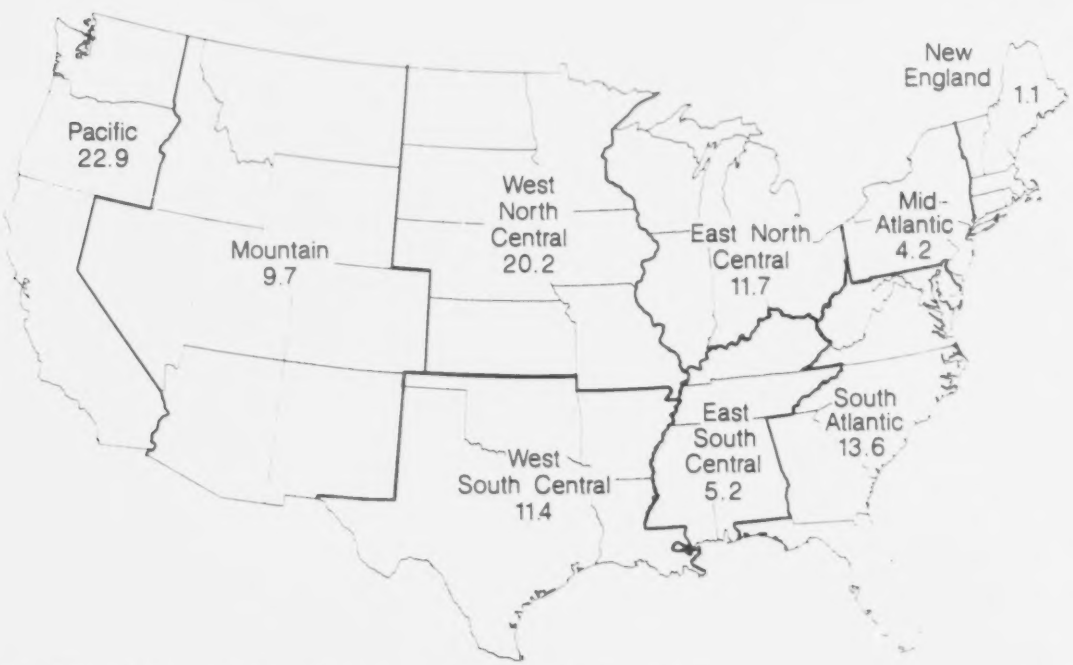
Today, technology is the major driving force behind the growth of large-scale farms. The substitution of mechanical power and chemicals for labor has been the dominant feature of technological development in agriculture. The results have been continual increases in the amount of resources that can be operated by an individual farmer, growth in farm size, and rapid increases in labor productivity in agriculture.

Modern large-scale farms originate either initially as a large-scale farm using the latest technology or grow into a large-scale farm from a traditional family-sized farm by acquiring more land or by consolidating with other farms.

Most farms that have a high value of output per acre do not depend on large landholdings to gain high levels of total output. This type of farm is frequently located in new or nontraditional production areas, causing regional shifts in production patterns. Farms that fall into this category include large-scale commercial cattle feeding in the Southern Plains, broiler production in the South, and processing vegetable production on the Pacific Coast (4).

Farms that require large landholdings to achieve very high levels of output, such as cash-grain farms, grow into large-scale farms by acquiring additional land usually from existing production areas rather than relocating. Therefore, a farm can only grow into a large-scale farm when additional land becomes available for purchase or lease. Additional land next to the farm is infrequently available. As a result, land-extensive large-scale farms often consist of several noncontiguous tracts rather than one large consolidated unit, thus making it a difficult and drawn-out process for such

Figure 2--Regional distribution of large-scale farms, 1982



Note: Regional shares are shown as percentages of all U.S. large-scale farms.
Source: (6)

farms to achieve the full economies inherent in the latest technology.

Regional Characteristics of Large-Scale Farms

Two-thirds of the Nation's large-scale farms have gross sales of less than $1 million (table 2). About 30 percent sell between $1 million–$4,999,999 of products, and less than 4 percent have gross sales that equal $5 million or more. The Pacific region has the highest proportion of farms (45 percent) with gross sales of $1 million or more.

The Pacific region also has 30 percent of the largest large-scale farms (more than $5 million in sales) compared with 20 percent for the West North Central region. However, 72 percent of the large-scale farms in the West North Central region were in the $500,000–$999,999 sales class; most are cash-grain or general livestock farms. In contrast, just over 50 percent of the Pacific region's large-scale farms had sales less than $1 million, reflecting the region's greater specialization in fruits, vegetables, and nursery products which tend to have higher sales than grain farms.

Proportionately, large-scale farms are most prominent in the Pacific region (4 percent of all farms) and in the Mountain region where they are slightly more than 2 percent of all farms (table 2). They are less than 1 percent of all farms in the East North Central, East South Central, and West South Central regions. In all other regions, the percentage of large-scale farms approximates the national level of 1.2 percent.

Resources and Production

Farms that grossed sales between $500,000–$999,999 contain 54 percent of the land in large-scale farms. Farms that grossed sales between $1 million–$4,999,999 have 39 percent of the land in large-scale farms, and farms with sales of $5 million or more have 7 percent. Nearly 25 percent of the total farmland in the Pacific region was in large-scale farms, the highest proportion for any region (table 3).

Farm output and product sales are more highly concentrated in large-scale farms than land in farms (table 4). In 1982, large-scale farms produced nearly 33 percent of the total value of farm output. Farms with sales of more than $1 million accounted for 25 percent of the total value of output. The proportion of sales from large-scale farms ranged from a low of 14 percent in the East North Central region to a high of 65 percent in the Pacific region.

As large-scale farms move into a higher sales class, their value of output increases at a faster rate than acreage. The intensity of land use (and other resource use) on large-scale farms increases dramatically with farm size. In 1982, the average farm in the $500,000–$999,999 sales class operated 3,021 acres and had sales of $671,000. Average acreage in farms which had more than $5 million in sales was slightly more than double the acreage of the $500,000–$999,999 average (6,667 acres), but production was more than 21 times the output of the smallest large-scale farm ($14.5 million).

Commodities Produced

Statistics suggest that large-scale farms make more productive use of land resources than do their smaller counterparts. A major reason for this higher value of output per acre can be found by comparing their enterprise mix with that of all farms. The large-scale farms have a larger proportion of sales from intensive enterprises such as fed cattle, poultry, horticultural crops, and the high-value field crops than do all farms, and a smaller proportion from grains and oilseeds, low-value field crops, and dairy products (table 5). These differences, which are relatively small for the lowest large-scale sales class, become more pronounced in the higher large-scale sales classes.

Nearly 90 percent of the sales from farms with sales of $5 million or more come from vegetables, fruit, nursery and greenhouse, and from poultry and cattle. These commodity groups make up 64 percent of the sales from the $1 million–$4,999,999 sales class, 47 percent of the sales from the smallest large-scale farms, but just over 40 percent of the sales from all farms. Thus, the large-scale farms' higher land productivity is due in part to a more intensive enterprise mix.

Commodity Concentration by Large-Scale Farms

We can also evaluate the proportion of value of sales for each commodity that comes from large-scale farms. This indicates the relative importance of large-scale farms on a commodity-by-commodity basis.

Large-scale farms dominate the production and sales of several commodity groups (table 6). They account for nearly 70 percent of all commercial vegetable sales, over 60 percent of nursery and greenhouse products, and 50 percent of the sales from cotton, fruits and nuts, miscellaneous field crops, poultry, and cattle. These farms account for less than 5 percent of tobacco sales and about 12 percent of the grains and oilseeds sold. The commodities in which large-scale farms account for a major part of the value of output are all high-value

Table 2—Regional distribution of large-scale farms by sales class, number, and percentage of all farms within region, 1982

Region	Sales class						All large farms		All farms
	$500,000–$999,999		$1 million-$4,999,999		$5 million or more				
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
New England	208	0.80	88	0.34	10	0.04	306	1.18	25,958
Mid-Atlantic	832	.78	303	.29	20	.02	1,155	1.09	106,019
East North Central	2,513	.62	689	.17	41	.01	3,243	.80	403,457
West North Central	4,037	.76	1,367	.26	215	.04	5,619	1.06	529,379
South Atlantic	2,534	.93	1,124	.41	120	.04	3,778	1.38	273,825
East South Central	1,066	.38	375	.13	21	.01	1,462	.52	283,070
West South Central	2,219	.65	794	.23	164	.05	3,177	.94	339,696
Mountain	1,682	1.38	861	.71	155	.13	2,698	2.22	121,777
Pacific	3,519	2.23	2,522	1.60	321	.20	6,362	4.03	157,795
United States	18,610	.83	8,123	.36	1,067	.04	27,800	1.24	2,240,976

Note: Totals may not add due to rounding.
Source: Census of Agriculture, unpublished data.

Table 3—Regional distribution of land in large-scale farms by sales class, number of acres, and percentage of all farmland in region, 1982

Region	Sales class						All large farms		All farms
	$500,000–$999,999		$1 million-$4,999,999		$5 million or more				
	1,000 acres	Percent	1,000 acres	Percent	1,000 acres	Percent	1,000 acres	Percent	1,000 acres
New England	122	2.63	94	2.03	7	0.15	223	4.79	4,632
Mid-Atlantic	517	2.81	251	1.36	29	.16	797	4.33	18,404
East North Central	3,255	3.67	1,173	1.32	92	.10	4,520	5.10	88,600
West North Central	9,821	3.83	4,853	1.89	475	.19	15,149	5.90	56,617
South Atlantic	3,005	5.25	3,616	6.32	1,049	1.83	7,670	13.41	57,226
East South Central	2,062	4.18	1,115	2.26	43	.09	3,220	6.53	49,277
West South Central	13,635	7.28	8,389	4.48	1,414	.76	23,437	12.51	187,291
Mountain	16,906	6.87	14,107	5.73	1,059	.43	32,073	13.03	246,101
Pacific	6,896	9.90	6,659	9.56	2,947	4.23	16,502	23.69	69,649
United States	56,217	5.70	40,258	4.10	7,114	.70	103,590	10.50	986,797

Note: Totals may not add due to rounding.
Source: Census of Agriculture, unpublished data.

Table 4—Regional distribution of value and percentage of large-scale farm sales by sales class, total sales, and percentage of all farm sales within region, 1982

Region	Sales class						All large farms		All farms
	$500,000–$999,999		$1 million–$4,999,999		$5 million or more				
	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars
New England	138	9.41	165	11.25	134	9.13	437	29.79	1,467
Mid-Atlantic	555	9.72	499	8.74	177	3.10	1,231	21.56	5,711
East North Central	1,658	7.41	1,115	4.98	419	1.87	3,192	14.27	22,371
West North Central	2,687	7.27	2,424	6.56	3,675	9.94	8,787	23.77	36,965
South Atlantic	1,695	12.10	2,046	14.60	1,225	8.74	4,966	35.45	14,009
East South Central	702	9.14	655	8.53	157	2.04	1,514	19.71	7,683
West South Central	1,473	9.38	1,425	9.08	3,268	20.82	6,165	39.27	15,698
Mountain	1,150	10.99	1,622	15.50	2,301	21.99	5,073	48.49	10,462
Pacific	2,426	13.84	4,796	27.35	4,179	23.84	11,401	65.03	17,533
United States	12,484	9.50	14,746	11.20	15,534	11.80	42,764	32.40	131,900

Note: Totals may not add due to rounding.
Source: Census of Agriculture, unpublished data.

Table 5—Percentage of large-scale and all farms value of sales by commodity, 1982

Commodity	Sales class			All large farms	All farms
	$500,000–$999,999	$1 million–$4,999,999	$5 million or more		
			Percent		
Grains and oilseeds	21.9	9.3	1.4	10.1	27.6
Cotton and cottonseeds	4.3	3.9	2.4	3.5	2.5
Tobacco	.7	.2	.1	.3	2.2
Hay, silage, and field seeds	1.6	1.5	.6	1.2	1.8
Vegetables and melons	4.0	8.5	7.1	6.7	3.1
Fruits and nuts	5.7	10.0	5.5	7.1	4.4
Nursery and greenhouse	4.4	7.8	4.4	5.6	2.9
Other crops	4.7	4.3	3.8	4.2	2.8
Poultry and products	12.5	14.1	8.9	11.8	7.4
Dairy products	10.5	10.6	1.4	7.3	12.4
Cattle and calves	20.1	23.4	61.6	36.3	24.0
Hogs and pigs	8.0	4.0	.9	4.0	7.5
Sheep, lambs, and wool	.4	.4	.5	.5	.5
Other livestock	1.0	1.7	1.4	1.4	1.1
			Million dollars		
Total product sales	12,484	14,746	15,534	42,764	131,900

Source: Census of Agriculture, unpublished data.

Table 6—Percentage of value of commodity sales from large-scale farms and total value of commodities sold by all farms, 1982

Commodity	Sales class			All large farms	All farms
	$500,000–$999,999	$1 million–$4,999,999	$5 million or more		
	..... *Percent*				*Million dollars*
Grains and oilseeds	7.5	3.8	0.6	11.9	36,409
Cotton and cottonseeds	16.8	18.0	11.6	46.3	3,233
Tobacco	3.2	1.3	.3	4.8	2,917
Hay, silage, and field seeds	8.8	9.7	4.1	22.6	2,312
Vegetables and melons	12.1	30.3	26.7	69.1	4,145
Fruits and nuts	12.2	25.1	14.6	52.0	5,846
Nursery and greenhouse	14.5	29.9	17.9	62.3	3,821
Other crops	15.8	17.2	15.8	48.8	3,716
Poultry and products	15.9	21.3	14.2	51.3	9,797
Dairy products	8.0	9.6	1.3	19.0	16,320
Cattle and calves	7.9	10.9	30.2	49.1	31,635
Hogs and pigs	10.2	5.9	1.4	17.5	9,868
Sheep, lambs, and wool	8.3	10.9	13.4	32.5	608
Other livestock	8.7	18.2	15.3	42.2	1,416
All commodities	9.5	11.2	11.8	32.4	131,900

Note: Totals may not add due to rounding.
Source: Census of Agriculture, unpublished data.

commodities requiring intensive use of land and other resources.

Organizational and Operating Characteristics of Large-Scale Farms

Using unpublished data from the 1982 Census of Agriculture, we show the per farm averages for selected farm characteristics for farms with sales of $500,000 or more (table 7). Only 1.2 percent of all farms in the United States are in this sales class. The average large-scale farm has 3,726 acres, 1,388 of which are cropland and 1,177 of which are harvested cropland. The value of land and buildings is $3.3 million, with $280,000 worth of machinery and equipment. Some 61 percent of the land is owned by the operator, while 39 percent is rented (net of land rented in and out).

Most farm operators are part owners, are almost 50 years old, and have spent an average of 20 years on their present farm. Almost 40 percent of the operators are sole proprietors, but 37 percent are corporations. The majority of the corporations are family held. However, most have fewer than 10 shareholders. Nonfamily corporations account for only 6 percent of farms in this class. While 16 percent of these corporations have more than 10 shareholders, they are less than 1 percent of all farms in the United States.

Nearly 66 percent of large-scale farms are concentrated into four Standard Industrial Classification (SIC) types. The largest number are livestock farms (almost 29 percent). Cash-grain farms account for almost 15 percent, dairy farms for 11 percent, and field-crop farms for almost 10 percent. There is a slightly different concentration in sales. Cattle sales are 36 percent of total sales, poultry sales are 12 percent, grain sales are 10 percent, and dairy, fruit, and vegetable sales are each about 7 percent of sales on these farms.

Livestock accounts for about 65 percent of the operating expenses on the large-scale farm. The lowest expense is for energy, which is only 6 percent. Loan interest approximates 8 percent of total expenses. Average returns (sales less expenses) are about $474,000 per farm and $127 per acre. The data in table 8 show the operating ratios for all farms and the disaggregated $500,000 sales class.

Comparison of Large-Scale Farm Subclasses

Comparing the different subclasses of large-scale farms with each other and the national average for all farms shows how their organization and operating characteristics change across the size spectrum. There are not many major differences between farms with sales ranging between $500,000–$4,999,999. There are dramatic changes, however, after reaching $5 million.

For large-scale farms collectively, the largest number are sole proprietorships (39.7 percent), although 37.2 percent are corporations. However, separating these classes shows how the trend toward corporations increases with size. For farms with sales of $500,000–$999,999, almost 50 percent were sole proprietorship operations and less than 33 percent were corporations. For farms with sales between $1 million–$4,999,999, almost 50 percent were corporations, and less than 33 percent were sole proprietors. For the largest farms (over $5 million in sales), almost 80 percent were corporations—50 percent were family held (83 percent have less than 10 shareholders), and 30 percent were nonfamily (56 percent have less than 10 shareholders). The proportion of partnerships declines as farms grow, although partnerships exceed sole proprietorships in the largest class.

While these large-scale farms are heavily concentrated in livestock by SIC type, they become even more concentrated when this class is separated into larger sales categories. For farms with sales of $500,000–$4,999,999, livestock accounts for slightly more than 50 percent of their sales. Farms with sales of more than $5 million get almost 75 percent of their sales from livestock (many of these farms are feedlots). However, the dominance of other SIC types is different for the three sizes. For the smallest large-scale farm, the primary commodities are cattle, cash-grain, poultry, and dairy, accounting for 71 percent of the farms. For farms with sales of $1 million–$4,999,999, the commodity rankings by SIC type are cattle, poultry, dairy, and fruit, accounting for 63 percent of the farms. For the largest large-scale farms (sales over $5 million), the commodity rankings are cattle, poultry, and vegetables, accounting for 71 percent of farms. The largest farms are dominated by feedlots, poultry operations, and high-value vegetables. In contrast, the smaller large-scale farms are dominated by cattle ranches and cash-grain farms that require large landholdings and machinery complements, but whose output does not have as high a market value per acre as the largest farms.

Additionally, as farms get larger, the proportion of livestock expenses per dollar of livestock sales increases. Farms with sales of $500,000–$4,999,999 have 55–60 cents of expense per dollar while farms with sales over $5 million have 80 cents per dollar of livestock sales. Also, as farms get larger, total expenses per dollar of sales rise. The highest sales class has total expenses of 77 cents per dollar of sales while farms with

Table 7—Selected characteristics of large-scale farms, per farm averages, 1982

Characteristic	Unit	Sales class			All large farms	All farms[2]
		$500,000–$999,999	$1 million–$4,999,999	$5 million or more		
Farm numbers	Number	18,610	8,123	1,067	27,800	2,239,300
Average size	Acres	3,021	4,956	6,667	3,726	416
Total cropland	do.	1,188	1,613	3,154	1,388	198
Value of land and buildings	Dollars	2,392,437	4,443,500	11,253,065	3,331,828	340,822
Value of machinery and equipment	do.	216,704	327,658	1,047,597	281,015	41,732
SIC type:						
Cash grain	Percent	18.5	7.4	1.0	14.6	25.7
Field crops[1]	do.	10.1	8.7	6.0	9.6	11.3
Vegetable	do.	3.7	7.6	10.1	5.1	1.4
Fruit	do.	5.6	9.0	7.7	6.7	3.8
Poultry	do.	13.1	13.7	12.6	13.3	1.9
Dairy	do.	11.1	12.4	2.8	11.2	7.3
Cattle	do.	28.3	27.8	48.5	28.9	40.5
Total sales	Dollars	670,804	1,815,349	14,558,993	1,538,280	58,764
Grains	do.	146,777	169,577	205,047	155,676	16,245
Vegetables	do.	26,842	154,716	1,038,203	103,023	1,846
Fruit	do.	38,480	180,808	799,395	109,273	2,609
Poultry	do.	83,589	256,450	1,301,577	180,846	4,371
Dairy	do.	70,500	193,286	204,792	111,532	7,263
Cattle	do.	134,920	425,222	8,965,913	558,690	14,074
Operating expenses	do.	371,410	1,027,409	10,799,719	976,490	32,298
Energy	do.	37,567	81,558	290,145	60,115	4,444
Livestock	do.	194,750	599,376	8,676,377	638,515	15,960
Crop	do.	68,574	134,023	417,701	101,098	6,749
Labor	do.	70,519	257,452	1,415,496	176,762	5,145
Interest expense	do.	57,913	117,896	384,315	87,968	5,208
Returns	do.	241,481	625,044	3,374,959	473,822	21,291

[1]Other than cash grains.
[2]Excludes abnormal farms.
Source: Census of Agriculture, unpublished data.

Table 8—Operating ratios for large-scale farms, 1982

Ratio	Unit	Sales class			All large farms	All farms[1]
		$500,000–$999,999	$1 million–$4,999,999	$5 million or more		
Crop sales per acre of cropland harvested	Dollars	268.16	601.04	1,379.71	507.02	190.79
Crop sales per acre	do.	105.45	167.15	552.11	160.10	63.09
Total sales per acre, all products	do.	222.05	366.29	2,183.74	412.85	141.26
Crop sales as a percentage of sales	Percent	47.50	45.60	25.30	38.80	47.20
Livestock sales as a percentage of sales	do.	52.50	54.40	74.70	61.20	52.80
Sales per dollar of assets	Cents	25.70	38.00	118.40	42.60	15.40
Value of land and buildings per dollar of sales	Dollars	3.57	2.45	.77	2.17	5.80
Value of land and buildings per acre	do.	791.94	896.59	1,687.88	894.21	819.28
Value of machinery per dollar of sales	Cents	32.30	18.00	7.20	18.27	71.00
Value of machinery per acre	Dollars	71.73	66.11	157.13	75.42	100.32
Total expenses per dollar of sales	Cents	64.00	65.57	76.82	69.20	63.77
Livestock expenses per dollar of livestock sales	do.	55.28	60.63	79.76	67.80	51.25

[1]Excludes abnormal farms.
Source: Census of Agriculture, unpublished data.

sales of $500,000–$999,999 have total expenses of 64 cents per dollar.

Comparison With National Average for All Farms

On a per acre basis, asset values rise as sales increase. However, as a proportion of sales, asset values drop dramatically as sales increase. The value of land and buildings per acre is $819 for all farms. Farms with sales of $500,000–$999,999 have land values of $792 per acre, but those with sales of more than $5 million have land values of $1,688 per acre. Per acre machinery and equipment values do not rise above the national average for all farms as much as do land and buildings. The per acre value of machinery and equipment for all farms is $100. For farms with sales of $500,000–$999,999, this value drops to $72, but for the largest farms it increases to $157, reflecting more intensive use of machinery on very large farms.

Dramatic differences occur between large-scale farms and all farms in asset values per dollar of sales. All farms average $5.80 of land and buildings per dollar of sales, while those with over $5 million in sales average only 77 cents in land and buildings per dollar of sales. For machinery and equipment, the average for all farms is 71 cents per dollar of sales, and for the largest farms it is 7 cents. This lower investment cost per dollar of output gives a significant competitive advantage to large-scale farms.

Conclusion

Any discussion of how large-scale farms will fare relative to smaller farms is at best conjectural. However, indications are that these farms will continue to be an increasingly important segment of U.S. agriculture. Two recent studies concluded that a bimodal distribution of farms is emerging, with a large proportion of small farms, an increasing proportion of large farms, and a declining proportion of medium-sized farms (1, 2). Neither study, however, suggests that medium-sized farms will disappear.

The strongest evidence for the continued growth of large-scale farms is their ability to withstand economic adversity. Average net farm income of large-scale farms fell 36 percent between the peak farm income year of 1973 and 1984, much less than all other sales classes except farms with gross sales of $100,000–$499,999 (table 9).

Ability to control production costs is a major factor contributing to large-scale farms' ability to maintain net income levels. While the average large-scale farm recorded a slight decrease in production costs between 1973–84, all other sales classes recorded substantial increases in per farm cost of production (table 10). Consequently, large-scale farms may come through periods of economic adversity, such as the 1982–86 farm debt crisis, in a much stronger financial condition than small full-time commercial farms.

Another indicator that points to continued growth of large-scale farms is their rate of technological innovation. Large-scale farms tend to operate at the forefront of technology and are usually the first to adopt new production and managerial techniques. This is a major reason that they have been able to contain costs of production more effectively than have smaller farms. For these reasons, large-scale farms will continue to increase their numbers and share of total production.

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Table 9—Net farm income per farm, by value of sales class

Year	$500,000 and over	$250,000–$499,999[1]	$100,000–$249,999[2]	$40,000–$99,999	$20,000–$39,999	$10,000–$19,999	$5,000–$9,999	$2,500–$4,999	Less than $2,500
				Dollars					
1973	662,300	125,528	57,824	25,019	12,211	5,818	2,425	120	59
1974	658,909	119,850	53,130	20,039	9,888	4,477	1,556	-444	-173
1975	603,904	98,188	41,624	17,128	6,520	2,619	540	-865	-508
1976	577,418	87,659	37,538	15,127	5,483	2,091	275	-888	-638
1977	540,239	74,871	32,448	12,768	4,158	1,317	-100	-1,001	-809
1978	556,330	77,642	34,700	14,236	4,745	1,820	599	-583	-640
1979	535,935	82,344	34,810	12,268	3,642	1,005	22	-997	-917
1980	534,627	78,800	30,198	8,378	1,747	-168	-615	-1,395	-1,101
1981	485,300	71,576	24,990	4,824	105	-1,161	-1,058	-1,616	-1,086
1982	456,779	81,737	29,844	6,403	601	-1,260	-1,176	-1,848	-1,350
1983	411,624	84,727	30,554	6,082	403	-1,293	-1,636	-2,176	-1,498
1984	423,063	81,875	31,878	6,073	392	-1,471	-1,538	-2,228	-1,648

[1]For 1973–81, data are for the sales class $200,000–$499,999.
[2]For 1973–81, data are for the sales class $100,000–$199,999.

Source: (5).

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Table 10—Production expenses per farm, by value of sales class

Year	$500,000 and over	$250,000–$499,999[1]	$100,000–$249,999[2]	$40,000–$99,999	$20,000–$39,999	$10,000–$19,999	$5,000–$9,999	$2,500–$4,999	Less than $2,500
				Dollars					
1973	1,225,877	214,039	103,978	47,663	23,583	13,195	8,112	6,009	3,005
1974	1,202,324	217,507	107,111	50,569	25,386	14,195	8,869	6,608	3,340
1975	1,228,750	237,561	117,900	57,087	28,722	16,249	10,089	7,322	4,378
1976	1,250,431	246,166	121,563	59,480	29,827	16,957	10,544	7,562	4,855
1977	1,294,278	261,068	128,823	63,913	32,119	18,412	11,495	8,180	5,586
1978	1,263,984	257,154	126,707	63,482	31,940	18,437	11,539	8,159	5,833
1979	1,349,885	281,635	137,745	68,650	34,527	20,268	12,809	9,182	6,712
1980	1,255,843	286,578	141,349	70,806	35,670	21,312	13,630	9,925	7,419
1981	1,155,107	283,299	140,610	70,828	35,775	21,734	14,056	10,364	7,855
1982	1,137,012	283,125	139,485	70,156	35,581	21,977	14,395	10,766	8,282
1983	1,111,874	276,413	136,002	68,085	34,367	21,281	14,007	10,523	8,111
1984	1,123,954	281,794	138,741	69,545	35,170	21,709	14,233	10,666	8,213

[1]For 1973–81, data are for the sales class $200,000–$499,999.
[2]For 1973–81, data are for the sales class $100,000–$199,999.

Source: (5).

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